

A photograph of an air traffic control tower at sunset. The tower is illuminated with blue lights, and its top is lit with a warm yellow light. The sky is a vibrant mix of orange, red, and purple. The tower is positioned on the left side of the frame, and the text is overlaid on the right side.

Analysis of Operational Trial for Airspace Flow Program conducted on ATS route M771 to ZSPD

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Background on M771 Operational Trials to ZSPD

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- Flow Control Restrictions imposed on ATS route M771 DOSUT - DOTMI
 - No predictability (up to 240 minutes MINIT)
 - Uncertainty for airlines and passengers
 - Uncertainty for airport operators
 - Aircraft at gate experiencing extreme delays contributing to ground resource challenges
- Increased workload and complexity for ATC
 - Departed aircraft require extensive airborne holding to meet the imposed restriction
 - Complex mixture of different restrictions imposed on a single ATS route
 - ATC to tactically manage multiple restrictions imposed on ATS route M771
 - LSWD
 - MINIT for ZSPD
 - MINIT for other aerodromes (e.g. ZSAM, ZSFZ, ZSQZ, etc.)
- Aims to offer predictability to stakeholders
- Leverages on the existing ATFM concepts, Distributed Multi Nodal ATFM Network and CMCP
- Requires collaboration between stakeholders (ANSPs, airport operators and airspace users) to be effective



Scope

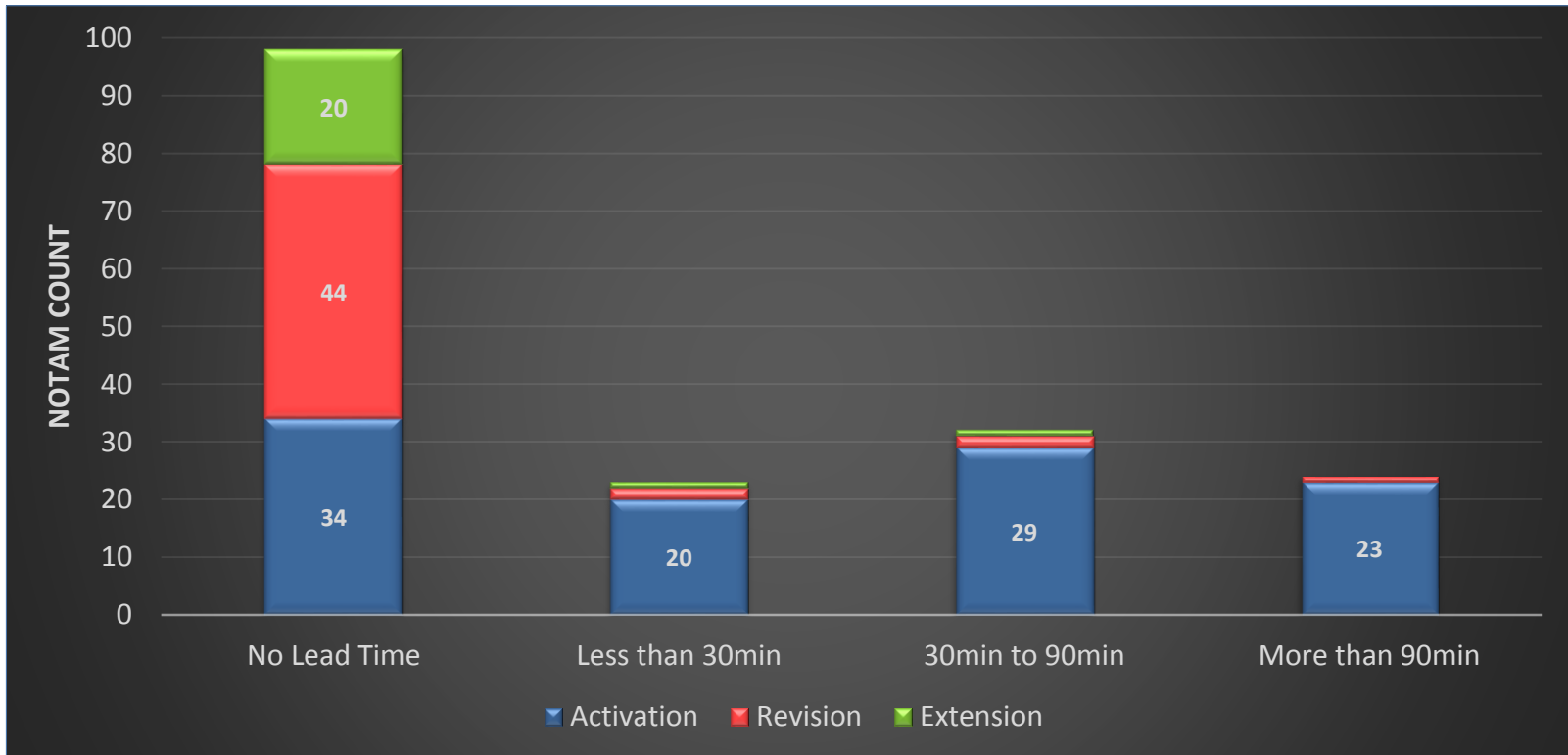
Scope

- Post Operations Analysis
- Stakeholders feedbacks and suggestions
- Other Challenges
 - Flow restriction to other aerodromes

Post Operational Analysis (Jun-Dec 2018)

Post Operational Analysis – NOTAM lead time

- NOTAM lead time before the start of flow control measures on M771 DOSUT DOTMI to ZSPD

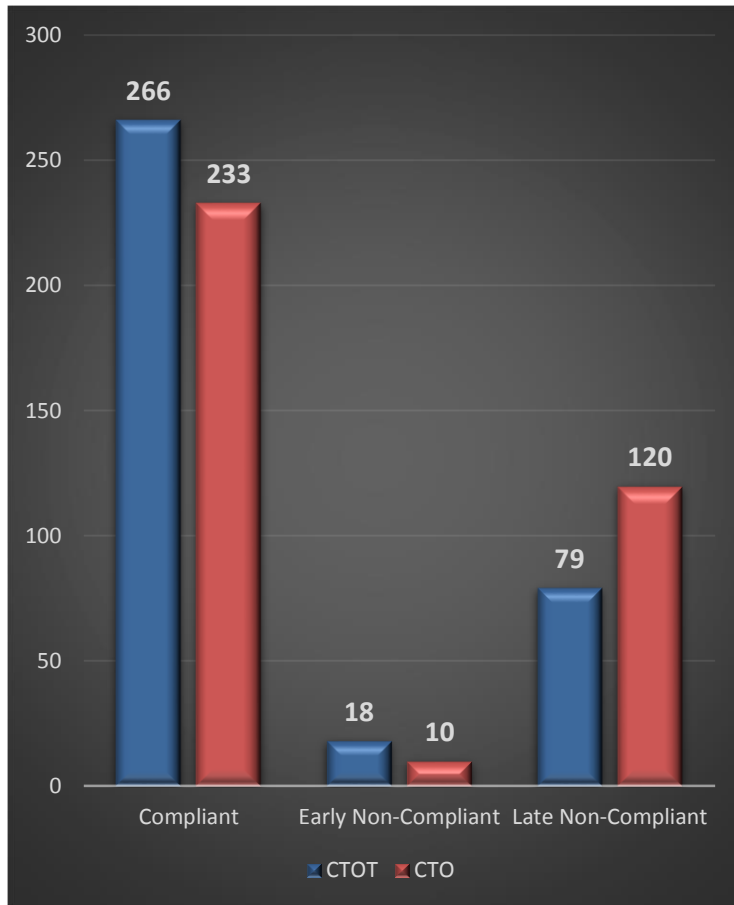


Revision: Changes in MINIT requirements, regardless of whether there are changes to its duration

Extension: Changes in duration, but no changes in MINIT requirements

Post Operational Analysis – CTOT and CTO (DUD) Compliance

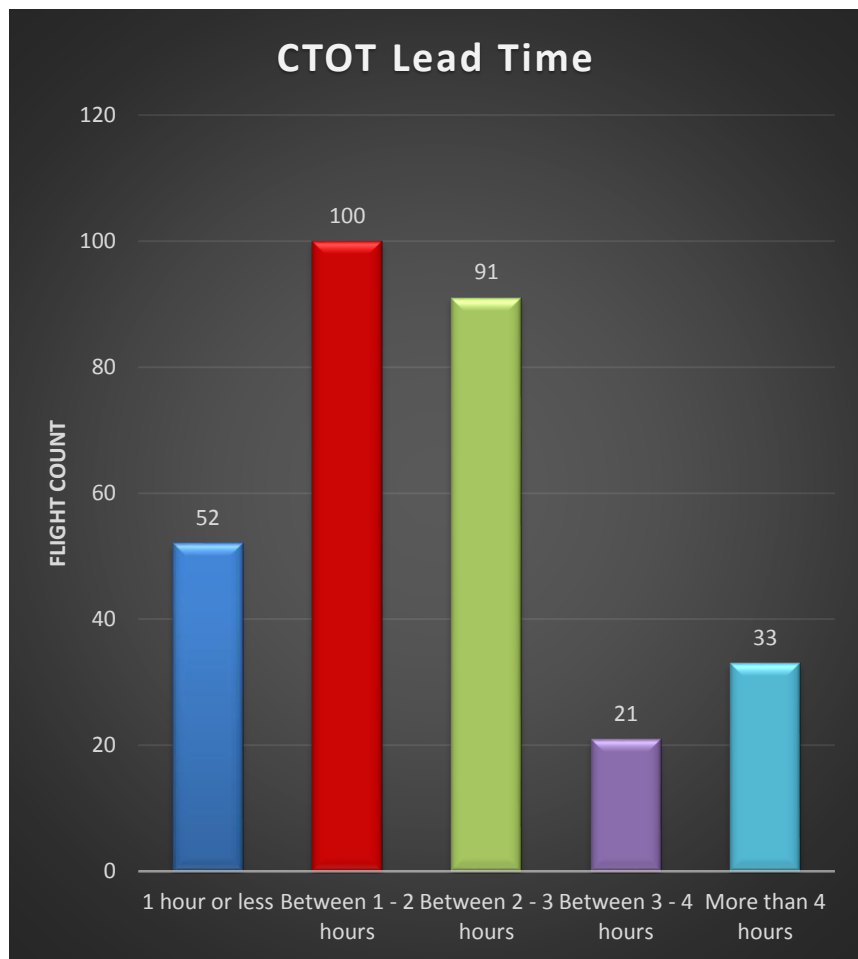
- -5/+5 mins compliance window



Reasons for late non-compliance (CTOT vs CTO)

- Downstream ACC imposing additional air delay to compliant flights to facilitate traffic from other aerodromes
- Change in MINIT requirement with little or no lead time
- Extended track miles due to weather
- Difference in flight time; Actual vs Filel

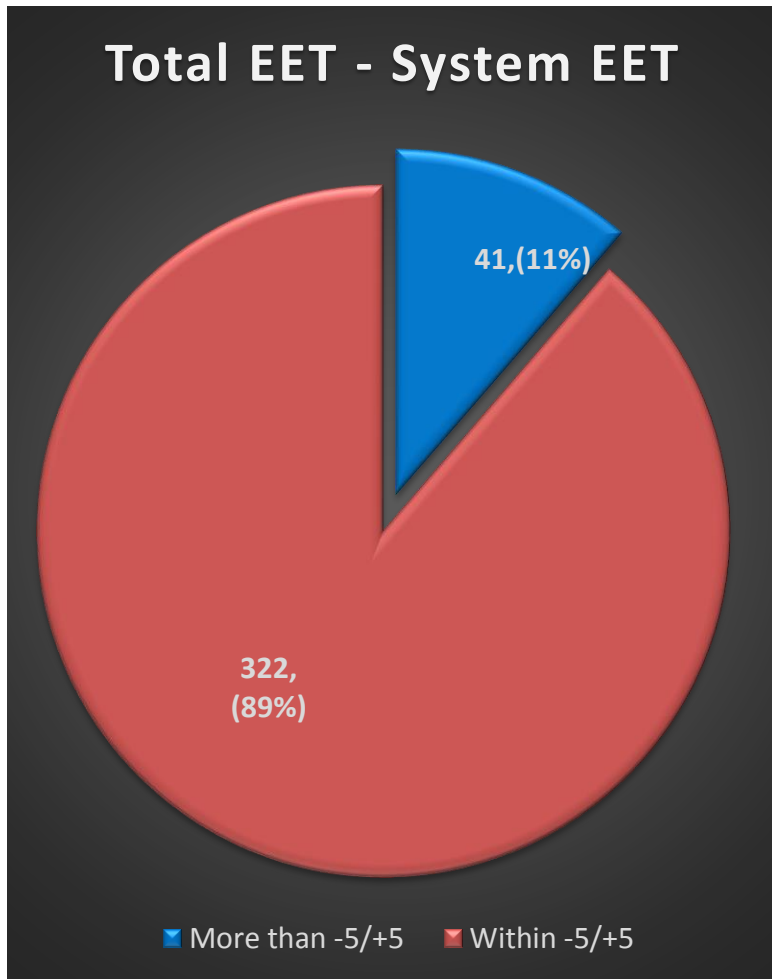
Post Operational Analysis – CTOT Lead time



52 flights encountered lead time of 1 hour or less

- Might not be effective to re-allocate their resources
- Due to nature of lead time given to ATFMU

Post Operational Analysis - EET Verification



89% within system calculated EET window

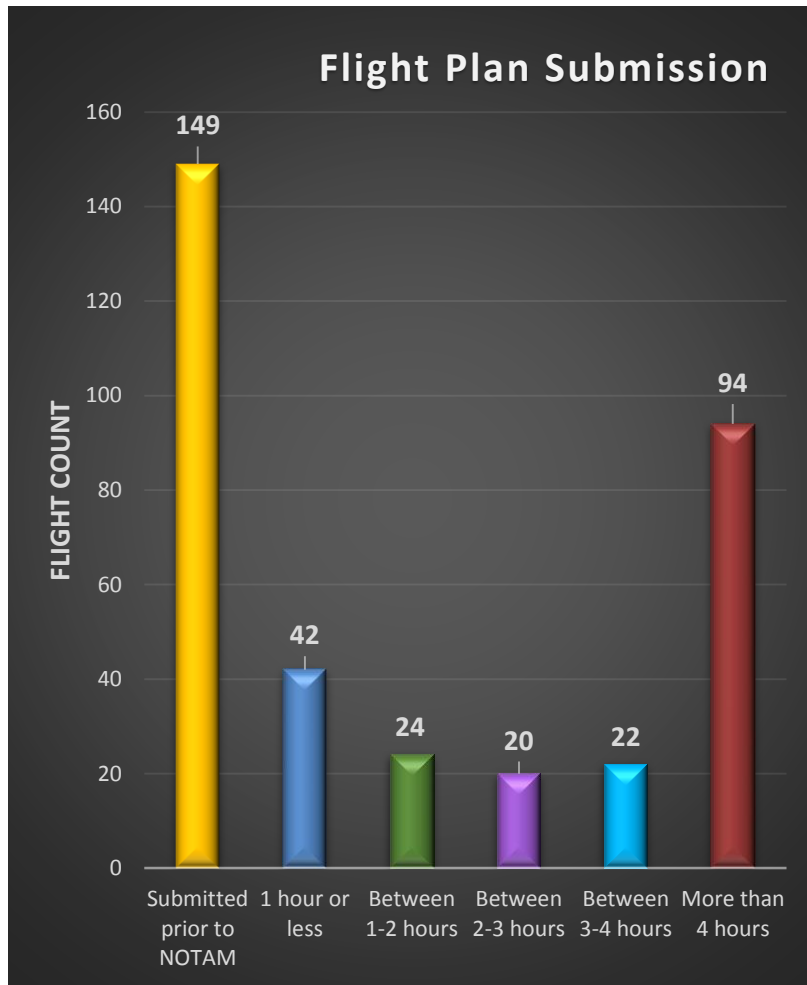
(Within 5 mins of ATFM system calculation)

- Ascertain accuracy of system's calculation
- Ascertain accuracy of EET within filed flight plans

11% out of system calculated EET window

- Tactical intervention by ATC to meet additional ad-hoc restrictions imposed by downstream ACCs, which were trying to manage traffic from other merging flows.
- Extended track miles due to weather
- Variance in flight times

Post Operational Analysis – Flight Plan Submission



Aircraft operators are supposed to submit flight plans within 1 hour from receiving the notification email from CAAS ATFMU

- For allocation of CTOT and CTO based on the planned off block time of affected flights
- Ample lead time for prompt distribution of CTOT and CTO
- Ensure equity of delay distribution

Flight plan submitted late will be assigned with the last available slot

Other Flow Restrictions on M771

Other Flow Restrictions on M771 (ZSAM/ZSQZ/ZSFZ)

- MINIT restriction with range of 20-45 minutes separation between aircrafts regardless of altitude
- Currently handled tactically by the ATCs
- Challenges faced:
 - i. No lead time was provided for this flow restriction before the activation.
 - ii. Airborne flights originating/overflying WSJC ACC for M771-DUD instructed to take additional delay by downstream ACCs to facilitate their flights.
 - i. Singapore ATC had to orbit aircraft to meet the restrictions, as there was insufficient distance on M771 within Singapore FIR to lose the time en-route.

For Considerations

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- To increase predictability for stakeholders, the issuance of CTOTs/CTOs had been validated as an operationally feasible concept
 - ATFMUs can consider CTOTs/CTOs, instead of MINIT
- Providing lead time or exemption criterion in the NOTAMs.
- Downstream ATFMU to consider issuing CTOTs/CTOs for:
 - Better management of flights at the constraint point as there are other traffic flows joining M771 after DUD
 - Applies to current M771 (ZSPD Trial) and other destination airports in China that are frequently affected by Flow Control Restrictions



Thank you